

**INDIAN CHIEFTAIN.**  
JOHN L. ADAIR, Editor.  
M. E. MILFORD, Manager.  
VINITA - INDIAN TERRITORY

WELL-DRAINED SOIL.

The amount of heat saved by good systems of drainage.

The amount of heat in the soil is a matter of the highest importance to the farmer. The reader need not be told that it has a great influence upon the germination of seeds and the growth of plants. A certain amount of heat in the soil is essential to the germination and growth. A certain amount of heat is also essential to the decomposition of carbonic acid by plants. Indian corn will not decompose carbonic acid at a temperature lower than about fifty-five degrees. If the temperature of the soil can be raised plants will grow faster. Our farm crops may wither in summer, but this is not because the soil is too warm, but because there is a lack of moisture in it, or what is often the cause, the atmosphere is so dry that the moisture is exhausted too rapidly from the plant. It would be very advantageous to increase the warmth of the soil in the spring, for by so doing we could get plants started several days earlier and their growth would be more rapid. In the North especially the seasons are too short for many plants, and even those which mature well enough would make a heavier yield if started earlier and forced along for the first few weeks by warmer soil. There are several practicable means for increasing the warmth of the soil. Draining is one of them, and this is the best season for determining the amount and probable cost of such work to be done during the year. In general, there is not so much need of soil drainage in this country as in Great Britain and on the continent; yet very many, if not a considerable majority, of our fields would be benefited by drainage, the benefit being greater than the outlay. Drained soils are warmer than undrained ones, because much of the water which passes through them would otherwise be evaporated; and this evaporation, it must be remembered, requires enough heat to make the water into vapor. The amount of heat thus used is quite large. It is likely equal to that produced by burning two-thirds of a ton of coal per day for each acre on an average throughout the year. If this heat were not absorbed by the water, it would be largely absorbed by the soil, if all of it were not. The specific heat of water is greater than that of the soil—five times as great as humus, seven times as great as loam, eight times as sand. Hence more heat is required to warm a certain weight of water than of the soil. Spread, while hot, between the same temperature. As drains remove an excess of water in the soil, in the spring at least, it would remove water that otherwise would take heat from the earth. More than this, water is a poor conductor of heat, and when the soil is wet, as in the spring, the heat will penetrate much more slowly than if the water were removed. In Prussia it has been officially determined that on an average the snow there melts a week earlier on drained than on undrained land; and the difference would not be less in this country. A difference of ten to fifteen degrees in temperature of drained and undrained soils has frequently been noticed; and the constantly higher temperature of drained soils is doubtless responsible for much of the larger growths upon them, and often would alone pay for draining. John M. Stahl, in American Agriculturist.

TWO POTATO TOOLS.

Home-Made Contrivances Which Save a Good Deal of Work.

In growing potatoes I find a great saving of labor and time in using a potato plow to dig the tubers and a scree to sort them. I had the front beam of my single shovel-plow bent so as to lay the plow nearly flat; then I straightened the shovel somewhat and had bars riveted to it. Chains drag behind the bars. This implement does good work if the cultivation has been level; but if the ground is badly ridged it does not bring all the potatoes to the top. The plow had been such a useful implement to me and to some of my neighbors, that I thought I would slip it over to my father-in-law's, some six miles away, and do him a good turn for many good ones he has done for me by throwing out his five acres of potatoes; but to my great surprise and annoyance, I found the potatoes so deep that when I gauged the plow to run under them, so much earth poured over that the tubers were not all brought into sight. At first I thought I had a "two-story" hill, but I now think that the depth of the tubers was due to a clover sod and mellow cultivation with large shovels.

This year I made a screen, on account of having an unusual number of small potatoes. I first made a chute with cross-bars, having openings between them, but potatoes too large to pass the openings would lodge and stop them. After cutting slots in a steel barrel and revolving it like a wheat screen, I had a sheet of wire cloth made out of No. 10 wire, and with square meshes an inch and a half in the clear. It was forty-eight inches long by twenty-eight wide. I rolled it up the long way, making a cylinder which I introduced into the frame in place of the barrel, and revolved it with a crank. It did well. Potatoes, dirt, etc., were shoveled into the hopper and falling into the screen, the dirt and small potatoes dropped through on to an inclined plane made of wicker-work, with half-inch mesh through which the dirt fell, the little potatoes rolling down into a basket, while the large ones poured out at the other end of the screen into another basket. The screen works well with Rose potatoes; but for Burbanks and long, thin tubers generally the meshes should be a little smaller.—Natal New Yorker.

The Tooth of Time.

My Lovejoy—So you do not miss Mrs. Oldboy?

Mrs. Oldboy—Not particularly. Mr. Lovejoy—How strange! Why, this separation is a living death to me. If I could only see Amelia for an instant. How I would appreciate a single moment.

Mr. Oldboy (gruffly)—You will appreciate a single moment more in ten years.—America.

—It is the tillers of the soil who walk through a gateway, instead of climbing the fence, he is worried for fear the lad isn't quite himself.

HOME, FARM AND GARDEN.

—Thin Pies.—One quart of flour, one tablespoon of lard and butter mixed, and one tablespoon of salt; make into a thin paste, with cold water; beat dough until it blisters, roll thin, prick with a fork and bake quickly.

—In planning out the next season's work, avoid the mistake of attempting to cover too much ground. With fruit and in the garden it is highly important to do thorough work and thereby secure the best quality.—Western Pieman.

—Grapes in open ground, which are pruned in autumn, should be laid down and kept down with such weights as sticks of wood, flat stones, brick, or, if rather tender, they may be slightly covered with earth or green branches.

—That noxious animal whose pungent odor quickly induces every one else to quit its neighborhood is, says Vick's Magazine, a great friend of the farmer in destroying insects, and the few eggs he parlous from the hens are as nothing compared with the number of noxious bugs and worms he consumes.

—In cold weather especially the feed of fowls should be dry. Whole or cracked grain is better than fine meal. It is better to give the gizzard something to do rather than have it relax from inaction. Give fowls access to clean water at all times, and they will drink all they need, but do not compel them to take water in order to get their necessary food.

—Cumb Pudding.—One quart of sweet milk, one pint of bread crumbs, three-quarters of a cup of sugar, yolks of four eggs, butter size of an egg, flavor with lemon; bake in a slow oven; when done spread over a layer of jelly, whip the whites of the eggs to a froth, add one cup of powdered sugar, pour over the jelly and bake a light brown. Serve cold.

—Glass is expensive for hot-beds, and those who prefer something easier may use cotton cloth, giving it two coats of boiled linseed oil. It requires but little attention, is easily handled, permits the heat and light to enter, and does not allow the heat to be radiated away at night as readily as does glass. It also has the advantage of reducing the cost of frames, as the expensive window-sash need not be used.

—Caramele Cake.—Take two cups of sugar, half a cup of butter, half a cup of milk, two and a half cups of flour, three eggs and a teaspoonful of baking-powder. Bake in jelly-pans. For filling, take one pint of brown sugar, tablespoonful of butter, half a cup of milk and half a cake of chocolate, put in a pan, (leaving out the milk), and melt; stir until almost burnt, then pour in the milk. Spread, while hot between the cakes.—Home Companion.

—Lettuce is almost always sown too thickly. The seed is very small, and it is impossible to distribute it thinly enough by hand unless mixed with some divisor. Wheat bran is as good as any thing. Cover the seed very lightly and press down with the hoe. No matter how thinly the plants may come up, the crop will cover the surface if the soil is rich enough, if timely care is used in sowing. If plants come up in masses, the leaves are stunted and worthless. Lettuce old enough to pick may be transplanted at any time during the summer, and such root set will make a large head before fall.

CULTIVATION OF SOIL.

To What Depth and to What Extent Farm Lands Should Be Tilled.

The cultivation of the surface soil to a depth sufficient to supply at all times the conditions of mellowess and moisture is the greatest desideratum in the production of crops, for if these conditions exist the greatest amount of plant food and moisture will be supplied, and the greatest possible return of crops will result. How little, then, has man to do toward the production of the fruits of the earth. He can not produce growth, nor does cultivation itself produce growth, but simply and only supplies the conditions for the appropriation of plant food and moisture, and for its supply to the greatest degree. To till the ground is the greatest thing and the only thing which man can do, and all the rest is provided and supplied by a benevolent Creator. To cultivate, or "till the ground," to a sufficient depth and to a sufficient extent to supply the conditions best calculated to promote the growth of crops, is the essential requirement. To neglect this is to fail in the fulfillment of the wise and generous provisions of the Creator, and the penalty must necessarily and inevitably result—insufficient supply of the products of the earth and great exhaustion of the surface soil and consequently increased labor and toll.

To what depth, then, and to what extent, should cultivation be given to supply the conditions best calculated to produce the greatest yield of crops? The answer must be that the depth of cultivation must reach that point at which the soil is liable to become dry and hard. It is plain that the cultivation of three or four inches of the surface soil will not prevent drying out. The depth should be more and no less than that which can readily be performed by a good, strong team of two or three horses, of such weight as to be best suited to perform the labor he does in farming. In a word, the depth of plowing should be not less than that which can be done by the most suitable team for farm work, but the furrows in plowing should be made narrow, so that the furrow may be well broken up, and the bottom and top soils well mixed together; the furrow should not be so wide as to bring the subsoil on top. No doubt can exist in the mind of the observant cultivator of the utility of not only deep, thorough and judicious plowing, but also of occasional subsoil plowing, to loosen up the earth to the depth reached by the ordinary plow. This subsoil plowing need not be done oftener than perhaps once in five or six seasons. The soil then will be sufficiently mellow and moist to the depth to which it is liable to become dry and hard, and this is the single, the only requirement in order to the production of the greatest yields of crops and the best quality of the products of the earth, designed for the sustenance of the life of man to the highest degree of enjoyment and happiness.

Mr. Oldboy (gruffly)—You will appreciate a single moment more in ten years.—America.

—It is the tillers of the soil who walk through a gateway, instead of climbing the fence, he is worried for fear the lad isn't quite himself.

—The Tooth of Time.

My Lovejoy—So you do not miss Mrs. Oldboy?

Mrs. Oldboy—Not particularly.

Mr. Lovejoy—How strange! Why,

this separation is a living death to me.

If I could only see Amelia for an instant. How I would appreciate a single moment.

Mr. Oldboy (gruffly)—You will appreciate a single moment more in ten years.—America.

—It is the tillers of the soil who walk through a gateway, instead of climbing the fence, he is worried for fear the lad isn't quite himself.

A. B. LEES' Appeal for Help.

—Your sickness and blindness are active. They are making a silent appeal for help. Your wife and children are suffering. Strengthless Bittern Sisters safely impeded them to activity. They are in imminent danger, and it is heartbreaking to witness their condition. Please help us. We are your friends and servants, and the health, Bittern Sisters, appeals every talent, drives out all sensations, and good health. Now is the time to take.

Hood's Sarsaparilla.

—My extract endorsed, turned out new eyes easily by applying. I am well again. We were obliged to keep her out of school, till two years ago. We had continual ill-health, but she failed to gain relief. I am now well again. I am now well again. My mother of rheumatism, and believing it must be good for the blood, I consulted to have my daughter, Mrs. H. H. Lee, entirely cured, in Vicksburg, Miss., 419 East Main Street, Marchington, Iowa.

A. N. KELLOGG NEWSPAPER CO., Kansas City, Mo.

—When we only 254 daily, we newspaper in the country in 1850, 1851, 1852, 1853, and 1854. Only photo-engraving establishment west of the Mississippi River.

FREIGHT, LOUISIANA, Nov. 11, 1875.

MESSRS. A. T. SHAWNEE-REDGER & CO., Rockville, Pa., Goods.—The sample bottle of pills you sent me last April I gave to my mother, and she has been taking them ever since. She is now in her eighty-ninth year, and is in excellent health. I am sending you a specimen of my mother's rheumatism, and believing it must be good for the blood, I consulted to have my daughter, Mrs. H. H. Lee, entirely cured, in Vicksburg, Miss., 419 East Main Street, Marchington, Iowa.

J. R. PIERCE'S.

—I have only 254 daily, we newspaper in the country in 1850, 1851, 1852, 1853, and 1854. Only photo-engraving establishment west of the Mississippi River.

JOHN C. CHAMAYAN.

—There is no reason to complain of the inequalities of the tariff. Jos. sticks are on the free list. Bills pay one-half of twenty-five per cent.

JOHN C. CHAMAYAN.

—There is no reason to complain of the inequalities of the tariff. Jos. sticks are on the free list. Bills pay one-half of twenty-five per cent.

JOHN C. CHAMAYAN.

—There is no reason to complain of the inequalities of the tariff. Jos. sticks are on the free list. Bills pay one-half of twenty-five per cent.

JOHN C. CHAMAYAN.

—There is no reason to complain of the inequalities of the tariff. Jos. sticks are on the free list. Bills pay one-half of twenty-five per cent.

JOHN C. CHAMAYAN.

—There is no reason to complain of the inequalities of the tariff. Jos. sticks are on the free list. Bills pay one-half of twenty-five per cent.

JOHN C. CHAMAYAN.

—There is no reason to complain of the inequalities of the tariff. Jos. sticks are on the free list. Bills pay one-half of twenty-five per cent.

JOHN C. CHAMAYAN.

—There is no reason to complain of the inequalities of the tariff. Jos. sticks are on the free list. Bills pay one-half of twenty-five per cent.

JOHN C. CHAMAYAN.

—There is no reason to complain of the inequalities of the tariff. Jos. sticks are on the free list. Bills pay one-half of twenty-five per cent.

JOHN C. CHAMAYAN.

—There is no reason to complain of the inequalities of the tariff. Jos. sticks are on the free list. Bills pay one-half of twenty-five per cent.

JOHN C. CHAMAYAN.

—There is no reason to complain of the inequalities of the tariff. Jos. sticks are on the free list. Bills pay one-half of twenty-five per cent.

JOHN C. CHAMAYAN.

—There is no reason to complain of the inequalities of the tariff. Jos. sticks are on the free list. Bills pay one-half of twenty-five per cent.

JOHN C. CHAMAYAN.

—There is no reason to complain of the inequalities of the tariff. Jos. sticks are on the free list. Bills pay one-half of twenty-five per cent.

JOHN C. CHAMAYAN.

—There is no reason to complain of the inequalities of the tariff. Jos. sticks are on the free list. Bills pay one-half of twenty-five per cent.

JOHN C. CHAMAYAN.

—There is no reason to complain of the inequalities of the tariff. Jos. sticks are on the free list. Bills pay one-half of twenty-five per cent.

JOHN C. CHAMAYAN.

—There is no reason to complain of the inequalities of the tariff. Jos. sticks are on the free list. Bills pay one-half of twenty-five per cent.

JOHN C. CHAMAYAN.

—There is no reason to complain of the inequalities of the tariff. Jos. sticks are on the free list. Bills pay one-half of twenty-five per cent.

JOHN C. CHAMAYAN.

—There is no reason to complain of the inequalities of the tariff. Jos. sticks are on the free list. Bills pay one-half of twenty-five per cent.

JOHN C. CHAMAYAN.

—There is no reason to complain of the inequalities of the tariff. Jos. sticks are on the free list. Bills pay one-half of twenty-five per cent.

JOHN C. CHAMAYAN.

—There is no reason to complain of the inequalities of the tariff. Jos. sticks are on the free list. Bills pay one-half of twenty-five per cent.

JOHN C. CHAMAYAN.

—There is no reason to complain of the inequalities of the tariff. Jos. sticks are on the free list. Bills pay one-half of twenty-five per cent.

JOHN C. CHAMAYAN.

—There is no reason to complain of the inequalities of the tariff. Jos. sticks are on the free list. Bills pay one-half of twenty-five per cent.

JOHN C. CHAMAYAN.

—There is no reason to complain of the inequalities of the tariff. Jos. sticks are on the free list. Bills pay one-half of twenty-five per cent.

JOHN C. CHAMAYAN.

—There is no reason to complain of the inequalities of the tariff. Jos. sticks are on the free list. Bills pay one-half of twenty-five per cent.

JOHN C. CHAMAYAN.

—There is no reason to complain of the inequalities of the tariff. Jos. sticks are on the free list. Bills pay one-half of twenty-five per cent.

JOHN C. CHAMAYAN.

—There is no reason to complain of the inequalities of the tariff. Jos. sticks are on the free list. Bills pay one-half of twenty-five per cent.

JOHN C. CHAMAYAN.

—There is no reason to complain of the inequalities of the tariff. Jos. sticks are on the free list. Bills pay one-half of twenty-five per cent.

JOHN C. CHAMAYAN.